

12.—The genus *Ctenotus* (Lacertilia, Scincidae) in the Northern Territory

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Abstract

The following 26 taxa are defined and keyed out: *pantherinus ocellifer* (Boulenger), *pantherinus calx* nov., *grandis* Storr, *spaldingi* (Macleay), *robustus* nov., *saxatilis* nov., *helenae* Storr, *inornatus* (Gray), *joanae* nov., *leonhardii* (Sternfeld), *tanamiensis* nov., *hilli* nov., *essingtonii* (Gray), *decaneurus* nov., *alacer* nov., *quattuordecimlincatus* (Sternfeld), *dux* Storr, *piankai* Storr, *calurus* Storr, *colletti nasutus* Storr, *schomburgkii schomburgkii* (Peters), *schomburgkii pallescens* nov., *strauchii* (Boulenger), *taeniatus* (Mitchell), *brooksi brooksi* (Loveridge) and *brooksi aranda* nov.

Introduction

This paper is virtually a continuation of my revision (Storr 1968) of the species inhabiting the Eastern Division of Western Australia, most of which extend to the adjacent deserts of the Northern Territory. Whenever such species are represented by ample material from the Territory they are redescribed in some detail. In other cases Territory samples are too small for a local description, and the reader is referred to my earlier descriptions.

Apart from the western desert species, the Territory fauna includes at least four other elements: (1) northern taxa, few of which extend inland as far as lat. 19°S; (2) Central Highland taxa; (3) Lake Eyre Basin taxa (these are found mainly in the lower valley of the Finke); and (4) eastern desert taxa (here largely confined to the Simpson Desert and arid situations about the lower Finke). All species in these categories are described as fully as the available material allows; but some samples are inadequate for an understanding of individual, let alone geographic, variation.

In my previous paper the Eastern Division species were allotted to six species-groups; their primary function, as in this paper, was to make diagnosis easier by providing some landmarks in what otherwise might have been a bewildering array of annectant forms. The additional species occurring in the Territory can be fitted into that framework; but it was found, from the viewpoint of both diagnosis and phylogeny, that the *lesueurii* group was best restricted to those species closest to *C. lesueurii*. The residue, herein called the *leonhardii* group, is almost certainly polyphyletic: *joanae*, for example, could well prove nearer to the *lesueurii* group; *hilli* to the *schomburgkii* group; and *essingtonii*, as Boulenger implied, to the *taeniolatus* group. However, to accommodate these problematic species in the mentioned groups, the latter would have

to be redefined in terms not so readily perceived as those used here (gross colour pattern and subdigital keeling).

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Key

1. Pattern not ocellate (indistinct ocelli may be present on side of body and tail in *grandis*); nasal weakly or not grooved ... 2
Pattern consisting solely of bold black-and-white ocelli; nasal strongly grooved — *pantherinus* group ... 7
2. Lateral pattern (whether striped, spotted or merely flecked) longitudinally orientated ... 3
Sides greyish with white centres of scales tending to form vertical bars; back boldly or indistinctly striped; second loreal usually high and apically angular—*grandis* group ... 8
3. Toes slightly or moderately or not compressed; subdigital lamellae smooth, callose or obtusely keeled; size small to very large ... 4
Toes strongly compressed; subdigital lamellae with a fine sharp keel ending in a mucron or short spine; head relatively low and snout long and narrow; size small (SVL up to 55) ... 6
4. Toes slightly or moderately compressed; subdigital lamellae narrowly callose or obtusely keeled (call moderately wide in *essingtonii* and *decaneurus*); size small to medium (SVL less than 76, except in adult *tanamiensis*) ... 5
Toes not or slightly compressed; subdigital lamellae smooth or widely callose; first supraocular much smaller than second (first and second fused in *spaldingi*); size large (SVL up to 116)—*lesueurii* group ... 9
5. Back and sides brown, patterned with a combination of stripes, spots, dots and dashes (*essingtonii* may be virtually unspotted)—*leonhardii* group ... 13

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Back and sides blackish (brown in <i>piankai</i>), patterned only with whitish stripes (an upper lateral series of pale spots in <i>alacer</i> and sometimes anteriorly in <i>piankai</i>)— <i>taeniolatus</i> group	17	17. Dorsal and lateral ground colour brown with a total of 6 white stripes	<i>piankai</i>
6. Back and sides black, patterned solely with 8 clearcut white stripes; nasals and prefrontals usually contiguous— <i>colletti</i> group	21	Dorsal and lateral ground colour black or dark brown with a total of 10 or more white or pale brown stripes and lines	18
Pattern including pale upper lateral spots or dark rectangular blotches— <i>schomburgkii</i> group	22	18. Black upper lateral zone enclosing a series of pale spots	<i>alacer</i>
7. Subdigital lamellae sharply keeled; claws unpigmented; proximal plantars only a little larger than adjacent plantars		No pale spots	19
		19. Pale stripes and lines 14 or more; prefrontals in contact; subdigital lamellae narrowly callose	20
		White stripes 10; prefrontals separated; subdigital lamellae with moderately wide calli	<i>decaneurus</i>
		20. Pale stripes and lines 14, clearcut; ear lobules small and subacute	<i>quattuordecimlineatus</i>
		Pale stripes and lines 16 or more, often indistinct; ear lobules long and acute	<i>dux</i>
8. Back reddish, striped with dark brown (vertebral stripe well developed; others may be broken or barely discernible); tail thick, basally constricted, and marked on sides with buffy dark-edged vertical bars		21. Tail blue; subdigital lamellae and proximal subcaudals marked with black; second ear lobule usually largest	<i>calurus</i>
		Tail brown; no black marks under toes and tail; prominent mid-frontal streak; first ear lobule very large	<i>colletti nasutus</i>
Back with alternating black and pale green stripes; tail slender		22. Head and back not red; white dorsolateral and midlateral stripes well developed; presuboculars 2; prefrontals usually separated	23
9. Upper labials usually 7; brow very acute and tending to conceal middle supraciliaries; ear lobules very large; second loreal 1.5 or more times as wide as high; SVL up to 116	10	Head and back red (in life); white dorsolateral and midlateral stripes absent or faint; one presubocular; prefrontals usually in contact	26
Upper labials usually 3; brow obtuse or moderately acute; nuchals rarely more than 3; SVL up to 92	11	23. Back black with 4 reddish or greenish white lines; black upper lateral zone enclosing a series of pale reddish spots	<i>schomburgkii schomburgkii</i>
10. Supraoculars 3; nuchals seldom more than 3; dark upper lateral zone enclosing large pale blotches		Back brown with or without pattern (a dark vertebral and modified laterodorsal stripe); upper lateral zone consisting of alternating dark and pale rectangular blotches	24
Supraoculars 4; nuchals seldom fewer than 4; dark upper lateral zone indistinctly marked with pale dashes or small blotches		24. Nasals forming a median suture; hindleg very short (less than 40% of SVL)	<i>strauehii</i>
11. Prominent white dorsolateral line. Little or no indication of dorso-lateral line	12	Nasals separated; hindleg more than 40% of SVL	25
12. Ground colour dark olive-brown; black, pale-edged vertebral stripe always present; tail usually less than 2.3 times as long as SVL		25. Supraoculars 4; supraoculars and upper labials 7	<i>schomburgkii pallescens</i>
Ground colour paler; vertebral stripe usually reduced or absent in adults, rarely pale-edged; tail seldom less than 2.3 times as long as SVL		Supraoculars 5; supraciliaries and upper labials 8	<i>taeniatus</i>
13. No dark stripes; pattern consisting solely of a white paravertebral line and dorsal and lateral series of white dots and dashes; SVL up to 92		26. Little pattern apart from small dark squarish upper lateral blotches; hindleg seldom less than 47% of SVL	<i>brooksi brooksi</i>
At least one dark stripe (vertebral or laterodorsal or upper lateral); SVL up to 75	14	Some development of dark dorsal stripes and of white dorsolateral and midlateral stripes; dark upper lateral blotches much higher than wide; hindleg less than 47% of SVL	<i>brooksi aranda</i>
14. Dark vertebral stripe; upper labials usually 8; nasals usually in contact. Little or no indication of dark vertebral stripe; upper labials usually 7	15		
15. Dorsally brown; vertebral stripe dark brown, narrow or moderately wide, edged with pale brown; white midlateral stripe usually not extending forward to level of arm	16		
Dorsally olive; vertebral stripe black, very wide at midback; white midlateral stripe extending to loreal region			
16. Nasals separated or just touching; scale-rows 28 or fewer; first ear lobule largest			
Nasals forming median suture; scale rows 30 or more; first ear lobule small			

Ctenotus pantherinus ocellifer

Lygosoma ocelliferum [Boulenger], 1896, Ann. Mag. Nat. Hist. (6) 18: 342. [For synonymy see Storr (1968: 99).]

Diagnosis. A large, stout *Ctenotus* with short, thick tail; dorsal and lateral pattern consisting solely of ocelli; nasal grooved; subdigital lamellae sharply keeled.

Distribution. Sandy deserts north to lat. 20°S. Extralimital in the Kimberley (west), North-West and Eastern Divisions of Western Australia, and northwestern South Australia.

Description. SVL (mm): 37-98; males with everted hemipenes 75-83; a gravid female 92. Length of appendages (% SVL): tail 146-195; foreleg 20-31; hindleg 32-49.

Nasals in contact. Prefrontals in contact (narrowly separated in one specimen). Supraoculars 4, first 3 (abnormally 2) in contact with frontal. Supraciliaries usually 7, occasionally 6, rarely 8. Palpebrals 9-14, anterior half of series keeled and mucronate. Second loreal 0.8-1.4 times as wide as high. Upper labials 8 (occasionally 9). Ear lobules 4-7, second or third usually largest, usually subacute in adults and obtuse in juveniles. Nuchals 2-4. Midbody scale-rows 32-37 (usually 34 or 36). Lamellae under fourth toe 20-27, each with a fine, dark keel.

Back and sides of body and tail olive brown with scattered ocelli, each consisting of a white spot or short longitudinal bar margined on each side by a short black longitudinal bar. White bars of laterocaudal ocelli tending posteriorly to form a midlateral stripe.

Remarks. The various populations are all much alike and differ from those of the Eastern Division of Western Australia only in their slightly longer appendages (a consequence no doubt of their generally lower latitude).

Material. Tanami Desert (AM 14201); 30 mi. NNW of The Granites (AM 26941); 20 mi. N of The Granites (NTM 2214); 20 mi. W of The Granites (NTM 2215); The Granites (AM 14199, 26983); 6 mi. E of The Granites (NTM 2071, 2213); 7-12 mi. SE of The Granites (ERP, 6); 40 mi. E of The Granites (NTM 2206-8); 5-10 mi. NNW of Chilla Well (ERP, 7); Corandirk (8 mi. SE of Chilla Well) (NTM 2610); Yuendumu (AM 26947-9); 20 mi. S of Tennant Creek (WAM 21521); 28 mi. NE of Barrow Creek (WAM 24348); Barrow Creek (NMV D544-5); 15 mi. SW of Barrow Creek (WAM 24364-5); Ehrenberg Range (23°17'S, 130°21'E) (JSE 400); Willie Rockhole (23°13'S, 129°45'E) (JSE 344); Kintore Range (JSE 275, 300); Davenport Hills (23°35'S, 129°19'E) (JSE 232); E of Bonython Range (23°42'S, 129°02'E) (JSE 182, 186); Hermannsburg (NTM 2362); Tempe Downs (NTM 2017); near George Gill Range (NTM 2007); Churnside Creek (Petermann Range) (JSE 143a-b); The Armstrong (JSE 88); 22 mi. E of Ayers Rock (WAM 20803); 22 mi. ENE of Curtin Springs (ERP, 4).

Ctenotus pantherinus calx subsp. nov.

Holotype. D10810 in the National Museum of Victoria, collected by A. J. Coventry and C. Tanner on 5 August 1964 at Dunmarra, Northern Territory, in 16°40'S, 133°23'E.

Diagnosis. Distinguishable from *C. p. ocellifer* by its greater size, relatively longer appendages, darker claws, unkeeled subdigital lamellae and greatly enlarged proximal plantars (in *ocellifer* they are slightly larger than adjacent plantars, which decrease gradually in size towards digits).

Distribution. Northern interior from the Roper River south to Dunmarra and the Nicholson River (Carpentaria drainage). Extralimital in Western Australia (east Kimberley).

Description. SVL (mm): 45-114. Length of appendages (% SVL): tail 192-210; foreleg 24-29; hindleg 35-46.

Nasals in contact. Prefrontals in contact. Supraoculars 4, first 3 in contact with frontal. Supraciliaries 7 (occasionally 8). Palpebrals 11-15. Second loreal 0.9-1.6 times as wide as high. Upper labials 8. Ear lobules 3-8, third or fourth usually largest, usually acute in adults and obtuse in juveniles. Nuchals 2-4. Midbody scale-rows 34-36 (usually 36). Lamellae under fourth toe 19-23, each with a narrow (rarely wide) dark-brown callus.

Coloration as in *C. p. ocellifer*.

Paratypes. Roper River Mission (NMV D10081); Roper River (QM J13000); 12 mi. N of Daly Waters (NTM 1632); Nicholson River Reserve (NTM 3860). (Western Australia: 38 mi. SSE of Wyndham (WAM 25090-1); 23 mi. SE of Kununurra (WAM 23125); 16 mi. E of Bohemia Downs (WAM 23050).)

Ctenotus grandis

Ctenotus grandis Storr, 1968, J. Roy. Soc. W. Aust. 51: 100. 24 mi. ENE of Laverton, W.A. (E. R. & H. L. Pianka).

Diagnosis. Very large, when adult, with relatively stout body and appendages; 5 dark dorsal stripes on a greenish ground (juveniles) or reddish ground (adults); sides dark with small white spots tending to form vertical bars; second loreal usually high, pentagonal, with angular apex.

Distribution. Tanami Desert. Extralimital in arid zone of Western Australia.

Description. SVL (mm) 44-74; a specimen with small hemipenes 68.5. Length of appendages (% SVL): tail 197-201; foreleg 23-30; hindleg 38-47.

Nasals in contact. Prefrontals in contact. Supraoculars 4, first 3 in contact with frontal. Supraciliaries 7 (6 in one specimen). Palpebrals 10-12. Second loreal 1.0-1.8 times as wide as high (in only one specimen more than 1.3). Upper labials 8 (9 in one specimen). Ear lobules 5-7, usually subacute in juveniles and acute in adults. Nuchals 2-4. Midbody scale-rows 28-34. Lamellae under fourth toe 24-26, each with a dark, usually narrow callus.

Remarks. As all this material is juvenile or subadult, the reader is referred to the original description for a more complete account. There is no reason for believing that the Territory populations differ significantly from those of the Eastern Division of Western Australia. The differences in relative length of appendages is almost certainly due to differences in latitude between collections.

Material: 30 mi. NNW of The Granites (AM 26945); The Granites (NTM 2081); 7 mi. SE of The Granites (ERP 11659, 11672-3); 30 mi. SW of Wauchope (WAM 24334); Yuendumu (SAM 5038).

Ctenotus spaldingi

Hinulia spaldingi Macleay, 1877, Proc. Linn. Soc. N.S.W. 2: 63. Endeavour River, Queensland (Chevert Expedition).

Lygosoma dorsale Boulenger, 1887, "Catalogue Lizards British Museum" 3: 226. Fly River, Papua (S. Macfarlane).

Diagnosis. A large member of the *lesueurii* group with well-developed pattern (including black vertebral stripe and whitish midlateral and ventrolateral stripes), 3 supraoculars, sharp brow, long ear lobules and very wide second loreal.

Distribution. South to the Victoria River basin, Larrimah and the Nicholson River (Carpentaria drainage), but evidently absent from far northwest. Extralimital in northern Queensland, Torres Strait islands and southern New Guinea.

Description. SVL (mm): 50-102; a male with everted hemipenes 93. Length of appendages (% SVL): tail 201-237; foreleg 20-26; hindleg 39-49.

Nasals narrowly separated or in short contact. Prefrontals in short to long contact. Supraoculars 3, first 2 in contact with frontal, first very long. Supraciliaries 8-12. Palpebrals 9-13. Second loreal 1.5-2.3 times as wide as high. Labials usually 7, occasionally 8. Ear lobules 3-5, long and acute in adults. Nuchals 3 (occasionally 2 or 4). Midbody scale-rows 28 or 30. Lamellae under fourth toe 18-23, each with a wide flat callus (higher proximally).

Dorsally olive green (coppery in life), more brownish on head and reddish on limbs and distal half of tail. Black vertebral stripe beginning narrowly on neck, dilating to maximum width on back and ending on base of tail; usually edged very narrowly with white. White dorsolateral line from upper postoculars to base of tail, narrowly edged above with black (this black margin, or laterodorsal stripe, may be broken into series of triangular spots). Blackish upper lateral zone enclosing series of large pale squarish blotches, partly suffused with grey and brown. Whitish midlateral stripe from lores nearly to end of tail (on which it is suffused with brown), interrupted by ear aperture and partly by thigh; anteriorly narrow and finely edged with black from lores to temples. Whitish ventrolateral stripe from groin to axilla or nearly so.

Geographic variation. The above description is based on the specimens from south of Pine Creek. The three specimens from Yirrkala are slightly different: the vertebral stripe is not so well developed; one of them has only 26 midbody scale-rows; two of them have 25 lamellae under the fourth toe; and in all three the prefrontals are narrowly separated. Perhaps this population is isolated (by the Arnhem Land plateau) from those of further south.

A large series (SAM 9343-56; NMV D8433-6) from Mornington Island (Gulf of Carpentaria, Queensland) differ from the southern populations of the Northern Territory only in their smaller size (SVL 33-90) and more numerous midbody scale-rows (28-32) and palpebrals (11-14). Their tendency for narrower second loreal and smaller nasals is shared with the nearby Nicholson River series.

Further east in Queensland, judging from the syntypes of *spaldingi* (MM 418-21), a series from Cape York (QM J1701-4) and remarks of Cop-

land (1946), there is a reduction in dark pigmentation. The vertebral stripe is seldom fully developed, and the pale blotches of the upper lateral zone are confluent with the midlateral stripe. There is no pale ventrolateral stripe, and the nasals are always separated (usually widely so).

Material: Yirrkala (WAM 13516, 29789, 29791); 17 mi. SE of Pine Creek (WAM 23186-7); 22 mi. SE of Pine Creek (WAM 23185); Katherine (AM 12829); 16 mi SW of Auvergne (WAM 23140); Timber Creek (NMV D10775); Mataranka (WAM 23794); Larrimah (WAM 24122, 24125-6); 5 mi. S of Larrimah (NTM 1623-7); Nicholson River Reserve (NTM 3862, 3865, 3869).

Ctenotus robustus sp. nov.

Holotype. D4957 in National Museum of Victoria, collected by the Spencer-Gillen Expedition (1901-2) at Barrow Creek, Northern Territory, in 21°31'S, 133°53'E.

Diagnosis. A very large member of the *lesueurii* group with vertebral and subocular stripe well developed; upper labials usually 7; prefrontals in long contact. Distinguishable from *spaldingi* by reduced lateral pattern and 4 (rather than 3) supraoculars.

Distribution. South to Barrow Creek.

Description. SVL (mm): 82-116. Length of appendages (% SVL): tail 184-222; foreleg 21-26; hindleg 36-45.

Nasals narrowly separated or in short contact. Prefrontals in long contact. Supraoculars 4, first small, second very large, first three in contact with frontal. Supraciliaries 9-11. Palpebrals 10-14 (seldom less than 12). Second loreal 1.2-1.8 times as wide as high. Upper labials 7 (8 in two specimens). Ear lobules 3-7, acute or truncate, very large, second or third largest. Nuchals 4 (occasionally 3). Midbody scale-rows 28-32. Lamellae under fourth toe 18-22, each with a wide flat callus (higher proximally).

Blackish vertebral stripe with narrow creamy-white margin, beginning narrowly on neck, dilating rapidly (on midback almost as wide as a paravertebral scale) and ending fairly abruptly soon after base of tail. Creamy-white dorsolateral stripe from last supraocular to distal quarter of tail, narrower than dark margin (laterodorsal stripe) above it. Dark upper lateral zone with one or two series of more or less distinct pale dashes, sometimes clumping to form small indistinct blotches. Narrow buffy-white midlateral stripe from bottom of loreals nearly to end of tail, interrupted by ear aperture and slightly by thigh, usually broken into series of dashes from ear aperture to behind level of arm.

Geographic variation. Northern specimens (south to Port Keats) have considerably longer appendages than the Tennant Creek and Barrow Creek series.

Paratypes. East Alligator River (USNM 128756); Darwin (AM 3663, 4981); Port Keats Mission (AM 14223, 14230); Tennant Creek (NMV D40, 2912, 2918, 2922-3, 2939); Barrow Creek (NMV D548, 2925, 4958-60, 5616).

Ctenotus saxatilis sp. nov.

Holotype. R24239 in Western Australian Museum, collected by G. M. Storr and A. M. Douglas on 23 September 1964 at 10 miles east of Tennant Creek, Northern Territory, in 19°40'S, 134°20'E.

Diagnosis. A moderately large member of the *lesueurii* group with pale-edged, black vertebral stripe, and white dorsolateral stripe margined above and below with black. Distinguishable from *robustus* by absence of pale subocular stripe, narrower vertebral stripe, more numerous labials, fewer supraciliaries and nuchals, and smaller nasals and prefrontals.

Distribution. Stony hills and granite outcrops north to lat 18°S. Extralimital in far northern South Australia.

Description. SVL (mm): 41-86. Length of appendages (% SVL): tail 190-242; foreleg 20-27; hindleg 36-42.

Nasals separated (in short contact in one juvenile). Prefrontals usually in contact. Supraoculars 4, first small, second large, third narrow, first 3 in contact with frontal. Supraciliaries 6-9 (usually 7 or 8). Palpebrals 10-13 (mostly 10 or 11). Second loreal 1.3-1.8 times as wide as high. Labials usually 8 (occasionally 9, rarely 10). Ear lobules 3-7, obtuse in juveniles, acute or subacute in adults, third usually largest. Nuchals 2 or 3. Midbody scale-rows 27-32. Lamellae under fourth toe 17-24, each with a wide, flat, grey or brown callus, higher proximally.

Dorsally dark olive-brown, greyer on head, paler and browner on tail. Black, pale-edged vertebral stripe beginning narrowly on neck and extending to between base and middle of tail; on mid-back considerably narrower than a paravertebral scale. White dorsolateral line from about level of ear to base of tail, after which it becomes wider and suffused with brown; narrowly or widely margined above with black. Upper lateral zone black mottled with greyish or brownish white; pale markings coalescing, especially in juveniles to form a series of moderately large spots; represented on tail by dark-edged pale stripe. Whitish mid-lateral stripe, usually breaking up into spots anteriorly (i.e. from ear to level of arm), extending nearly to end of tail. Lower lateral zone dark greyish-brown, mottled paler. Greyish-white ventrolateral stripe sometimes indicated.

Paratypes. 13 mi. N of Powell Creek (WAM 24191); Helen Springs (WAM 24199); 14 mi. N of Wauchope (WAM 24297-8); 7 mi. N of Wauchope (WAM 24302-3); Barrow Creek (NMV D5055); Mt. Doreen (QMJ 13001); Alice Springs (NTM 1485; NMV D167); Ooraminna (NTM 2015); Bagots Creek (NMV D198); Hermannsburg (MCZ 35355-63); Illamurta (NMV D469); "Central Australia" (NMV D205, 2070); "Darwin" (NMV D1516).

Ctenotus helenae

Ctenotus helenae Storr, 1968, J. Roy. Soc. W. Aust. 51: 100. 24 mi. ENE of Laverton, W.A. (E. R. & H. L. Pianka).

Diagnosis. A moderately large member of the *lesueurii* group; back dark greenish-brown with little indication of pattern except for blackish vertebral stripe and mottled flanks.

Distribution. Sandy deserts north to latitude 20°S and east to Wauchope, Barrow Creek and Curtin Springs.

Description. SVL (mm): 36-92. Length of appendages (% SVL): tail 184-234; foreleg 20-29; hindleg 35-47.

Nasals separated (usually widely). Prefrontals in contact (very narrowly separated in one specimen). Supraoculars normally 4 with 3 in contact with frontal (3 with 2 on one side of one specimen), first small and second large. Supraciliaries 7 (occasionally 8, rarely 6). Palpebrals 9-13 (mostly 10 or 11). Second loreal 0.9-2.2 times as wide as high. Labials 7-9 (mostly 8). Ear lobules 3-5, obtuse in juveniles, acute or subacute in adults, second usually largest. Nuchals 2-4 (mostly 3). Midbody scale-rows 26 or 28 (rarely 30). Lamellae under fourth toe 20-26, slightly compressed, smooth or widely callose, higher proximally.

Material. Smoke Hills (31 mi. ESE of Tanami) (NTM 2775-8); 7 mi SE of Smoke Hills (NTM 2212); 26 mi. SW of Wauchope (WAM 24321-2); 6 mi. SW of Barrow Creek (WAM 24356); 15 mi. SW of Barrow Creek (WAM 24363); Yuen-dumu (AM 26946); Vaughan Springs (SAM 8166); Willie Rockhole (between Kintore and Ehrenberg Ranges) (JSE 342); Dead Bullock Plain, Tempe Downs (AM 26943-4); Shaw Creek (JSE 123b-c, 133); Armstrong Creek (JSE 100); Curtin Springs (JSE 47).

Ctenotus inornatus

Hinulia inornata Gray, 1845, "Catalogue—lizards—British Museum", p. 78. "Swan River."

Lygosoma lesueurii concolor Glauert, 1952, W. Aust. Nat. 3: 196. Marilla, Western Australia (R. A. Anderson). [not *Lygosoma (Rhodona) bipes* var. *concolor* Werner.]

Diagnosis. A moderately small member of the *lesueurii* group with reduced colour pattern; white dorsolateral line always present, but narrow black vertebral stripe and lateral pattern obsolescent with age. Distinguishable from *helenae* by prominent white dorsolateral line and long tail; and from *spaldingi* by weaker brow, more numerous labials and supraciliaries, and narrower vertebral stripe (when present).

Distribution. South to the lower Victoria River, Daly Waters and the Nicholson River (Carpentaria drainage), but evidently absent from far northwest (Darwin area); Groote Eylandt. Extralimital in Western Australia (Kimberley and North-West Divisions) and Queensland (far northwest, including Mornington Island).

Description. SVL (mm): 34-87. Length of appendages (% SVL): tail 220-282; foreleg 19-32; hindleg 36-55.

Nasals usually separated (occasionally forming short suture). Prefrontals in contact (rarely separated). Supraoculars normally 4, with first 3 in contact with frontal; first small, rarely fused to second. Supraciliaries 7-11 (mostly 8). Palpebrals 9-14 (mostly 11 or 12). Second loreal 1.0-2.1 times as wide as high. Labials 8 (rarely 7 or 9). Ear lobules 3-7, obtuse in juveniles, acute or truncate in adults, first usually smallest, second or third usually largest. Nuchals usually 3, occasionally 2, rarely 4. Midbody scale-rows 27-34. Lamellae under fourth toe 18-26, slightly compressed, each with a flat wide callus (higher proximally).

Dorsally brown or olive brown, becoming paler and more reddish on tail and limbs. Occasionally a narrow black vertebral stripe from neck to base of tail, not or indistinctly pale-edged; usually reduced to a line on neck or fore-back; often completely absent. Narrow white dorsolateral stripe from brow or neck to tail (on which it is wider and brownish), narrowly and sometimes indistinctly margined above with blackish brown (paler on tail). Upper lateral zone dark brown, dotted or flecked with black and/or white; sometimes, especially in juveniles, bearing a series of white spots. Pale midlateral stripe variably developed; usually indistinct, greyish white and not extending forward beyond level of arm; sometimes (especially in juveniles) clearcut, white and extending forward to loreals as a narrow subocular stripe. Lower lateral zone greyish brown, with or without whitish or black flecks.

Material. Yirrkala (AM 12388-98, 12433-4, 26950-69; SAM 2860; WAM 13524, 29788, 29790, 29793-813; USNM 128577-84, 128586, 128593, 128596-7, 128599, 128601, 128608, 128619); Oenpelli (NMV D5163-4, 5167; USNM 128757); Mt Bunday (SAM 5949); Manton Dam (SAM 8931); Daly River (NTM 1601); Katherine (WAM 13987, 14003, 14032-3, 21908-16); 21 mi. NW of Newry (WAM 23129); Timber Creek (NMV D10766); 20 mi. N of Larrimah (WAM 23800-1); 10 mi. N of Larrimah (WAM 23808-9); 5 mi. N of Larrimah (NTM 1614-20); Larrimah (AM 12830; W.A.M. 24123-4, 24127-8); 5 mi. S of Larrimah (NTM 1621-2); 14 mi. N of Daly Waters (NTM 1608-12, 1631); Groote Eylandt (AM 9716-8, 10198, 26984; USNM 128389-90, 128392-401; NTM 1074); Borroloola (NMV D5090, 5092, 5115-8); Juster Creek, Nicholson River Reserve (NTM 3861, 3863-4, 3866-8).

Ctenotus joanae sp. nov.

Holotype. D5787 in National Museum of Victoria, collected by G. F. Hill on 15 July 1911 at Newcastle Waters, Northern Territory, in 17°23'S, 133°25'E.

Diagnosis. A short-legged, aberrant member of the *leonhardii* group with black vertebral and white midlateral stripes well developed; first ear lobule much the largest.

Distribution. Known only from one specimen from northern interior.

Description. SVL (mm): 47. Length of appendages (% SVL): foreleg 25; hindleg 41.

Nasals in moderately long contact. Prefrontals separated moderately widely. Supraoculars 4, first 3 in contact with frontal. Supraciliaries 7. Palpebrals 8 or 9. Second loreal 1.3-1.5 times as wide as high. Upper labials 8. Ear lobules 2 or 3, obtuse. Nuchals 5. Midbody scale-rows 26. Lamellae under fourth toe 19 or 20, each with a narrow dark callus.

Dorsally pale olive. Prominent black vertebral stripe from neck to tail, very wide on mid-back; only slight indication of extremely narrow pale edge. Narrow white dorsolateral stripe from brow to tail, widely margined above with black. Upper lateral zone olive brown with a series of small indistinct pale spots. Whitish midlateral stripe from bottom of second loreal nearly to end of tail, looping sharply above ear, sending branch down to arm, and almost completely interrupted by thigh. Pale olive-brown lower lateral streak from below and behind ear to tail, interrupted at arm (by branch of midlateral stripe) and hindleg. Some indication of whitish ventrolateral stripe.

Remarks. Named after Miss Joan M. Dixon, Curator of Vertebrates, National Museum of Victoria, in appreciation of the loan of the splendid collection in her care.

Ctenotus leonhardii

Lygosoma (Hinulia) leonhardii Sternfeld, 1919. Senckenbergiana 1: 79. Hermannsburg, Northern Territory (M von Leonhardi).

Diagnosis. A moderately large member of the *leonhardii* group; dark, pale-edged vertebral stripe always present; white midlateral stripe discernible posteriorly; upper lateral zone with longitudinal series of pale dots; nasals usually in contact; prefrontals usually separated.

Distribution. North to the Tanami Desert, Morphett Creek and Lake Nash. Extralimital in arid zone of Western Australia, Queensland and South Australia.

Description. SVL (mm): 33-75. Length of appendages (% SVL): tail 167-238; foreleg 21-31; hindleg 38-52.

Nasals usually in contact (occasionally narrowly separated, never widely). Prefrontals usually separated narrowly (occasionally separated moderately widely or in short contact). Supraoculars 4, first 3 in contact with frontal. Supraciliaries 6-8 (usually 7). Palpebrals 8-13. Second loreal 1.0-1.9 times as wide as high. Labials 8 (occasionally 9, very rarely 7 or 10). Ear lobules 2-6; obtuse in juveniles, usually acute in adults, second or third usually largest. Nuchals 2-5 (mostly 4). Midbody scale-rows 26-33 (mostly 28 or 30). Lamellae under fourth toe 21-28, each with narrow brown callus or obtuse keel.

Dorsally brown (paler in north and desert regions, darker in southern highlands). Dark brown vertebral stripe (sometimes narrow or indistinct in north), narrowly edged with pale brown. Whitish dorsolateral line, narrowly or widely margined above with dark brown. Dark-brown upper lateral zone with 1-3 longitudinal

series of pale dots. White midlateral stripe usually well developed posteriorly, becoming broken towards arm.

Material. 55 mi E of The Granites (NTM 2082, 2210); 7 mi. S of Banka Banka (WAM 24215); Lake Nash (SAM 7727); Tennant Creek and vicinity (NMV D37, 80, 2910; WAM 21462-6); 20 mi. S of Tennant Creek (ERP 9854); 19 mi. NE of Barrow Creek (WAM 24351); Barrow Creek (NMV D547, 4961-4, 5053, 5055-7); Aileron (WAM 24421); Kintore Range (JSE 241); Haasts Bluff (NMV D7749-52); Mt Liebig (SAM 6104-5); Mt Conway (AM 14190-2, 14194, 26971-82); Alice Springs and vicinity (NMV D165; NTM 1870-1, 2036-7); Arltunga (NTM 2854); Owen Springs (WAM 20851); Hermannsburg (MCZ 33529—paratype); Illamurta (NMV D451, 454, 458, 460, 462, 466, 468, 470-1, 474); Curtin Springs (WAM 20810-1); Mt Olga (JSE 77-8); Shaw Creek (JSE 123a); Kulgera (AM 14188); Charlotte Waters (NMV D2708); "Central Australia" (NMV D206, 271, 274, 275).

Ctenotus tanamiensis sp. nov.

Holotype. 2079 in the collection of the Animal Industry Branch, Northern Territory Administration, collected by K. R. Slater, D. R. Stephens and D. A. Lindner on 9 September 1964 at The Granites, Northern Territory, in 20°34'S, 130°22'E.

Diagnosis. A very large member of the *leonhardii* group with colour pattern consisting mainly of longitudinal series of white dots and dashes.

Distribution. Tanami Desert.

Description. SVL (mm): 49-91. Length of appendages (% SVL): tail 204-233; foreleg 23-29; hindleg 41-50.

Nasals in contact (separated in one specimen). Prefrontals usually separated, occasionally in short contact. Supraoculars 4, first 3 in contact with frontal (5 with 4 on one side of one specimen; first longitudinally divided on each side of another). Supraoculars 6-9. Palpebrals 11-13. Second loreal 1.3-2.1 times as wide as high. Ear lobules 4-7; obtuse in juveniles, acute or subacute in adults; second or third largest. Nuchals 2 or 3 (mostly 2). Midbody scale-rows 29-32 (mostly 30). Subdigital lamellae 24-30, moderately compressed, each with a narrow dark callus or obtuse keel.

Back and upper half of flanks dark reddish-brown. Head, tail, lips and lower half of flanks pale reddish-brown. Whitish paravertebral line from nape to base of tail, not extending anteriorly or posteriorly quite so far as adjacent vertebral stripe (i.e. dorsal ground colour). Remainder of back and flanks with 7 or 8 series of small whitish dots or dashes: those of first series (laterodorsal) relatively large, circular and suffused with brown; second series (dorso-lateral) white and tending to be short longitudinally oriented dashes rather than dots; 2 or 3 series of upper lateral dots (on dark ground).

very small and aligned vertically as much as longitudinally; midlateral and lower lateral dots (on pinkish-brown ground) larger and increasingly irregular in alignment. Dark-brown laterodorsal and upper lateral stripes on tail, first extending to about middle of tail, second nearly to end. Narrow white streak curving round bottom of orbit. Lips vertically barred with white and brown. Lower surface whitish, suffused with buff under tail.

Paratypes. The Granites (NTM 2080, 2218-21); 7 mi. SE of The Granites (ERP 11639, 11671); 7 mi. NW of Thompsons Rockhole (NTM 2203); 10 mi. SE of Renahans Well (ERP 11612).

Ctenotus hilli sp. nov.

Holotype. R23569 in Western Australian Museum, collected by G. M. Storr and A. M. Douglas on 18 September 1964 at Darwin, Northern Territory, in 12°26'S, 130°55'E.

Diagnosis. A very small, aberrant member of the *leonhardii* group with little or no dorsal pattern. Similar in coloration to *essingtonii* but differing markedly in scutation: larger nasals, smaller prefrontals, shorter frontal, smaller and more numerous ear lobules and more numerous midbody scale-rows.

Distribution. Except for a specimen from the "upper Roper River" only known from far northwest (Darwin and Bathurst Island).

Description. SVL (mm): 27-49. Length of appendages (%SVL): tail 166-230, foreleg 25-32, hindleg 47-53.

Nasals forming median suture (usually moderately long). Prefrontals widely separated. Supraoculars 4, first 3 in contact with frontal. Supraoculars 7 or 8. Palpebrals 9-12. Second loreal 1.1-1.6 times as wide as high. Labials 7 (occasionally 8). Ear lobules 4-6; small; obtuse in juveniles, usually subacute in adults; third usually largest (never first). Nuchals 3-5 (usually 4). Midbody scale-rows 30-34. Lamellae under fourth toe 22-28, compressed, each bearing an obtuse dark-brown keel.

Dorsally brown, usually without pattern; occasionally a dark vertebral line or narrow stripe. White dorsolateral line from last supraocular to tail, broadly margined above with blackish brown. Upper lateral zone blackish brown with a series of small, white longitudinally elongate spots; represented on tail by prominent black stripe nearly to tip. White midlateral stripe from thigh to level of arm, thence forward as a series of spots or dashes, and finally as an indistinct subocular stripe. Lower lateral zone usually unpatterned; occasionally brown with a series of white spots.

Remarks. Named after the distinguished zoologist, Gerald F. Hill, who collected most of the type series.

Paratypes. Bathurst Island (NMV D1652); Darwin (QM J2613-8; NMV D5525, 12371-2); upper Roper River (NMV D5140).

Ctenotus essingtonii

Tiliqua essingtonii Gray, 1842, "Zoological miscellany", p. 51, Port Essington, Northern Territory (J. Gilbert).

Diagnosis. A moderately small, aberrant member of the *leopardii* group with subdigital calli wider than usual; little or no indication of vertebral stripe; nasals and prefrontals usually separated; upper labials usually 7; ear lobules usually 2 or 3, first largest.

Distribution. North coast from Darwin to Yirrkala, inland to Mt Bunday and Oenpelli; Bathurst and Melville Islands; Groote Eylandt.

Description. SVL (mm): 28-64. Length of appendages (% SVL): tail 189-250; foreleg 21-29; hindleg 37-51.

Nasals separated (occasionally touching). Prefrontals separated (rarely touching). Supraoculars 4, first small, second large, third narrow, first 3 in contact with frontal. Supraciliaries 7-10. Palpebrals 8-13. Second loreal 1.0-1.7 times as wide as high. Labials 7 (occasionally 8). Ear lobules 2 or 3 (rarely 4 or 5), obtuse or subacute. Nuchals 3-6 (usually 4). Midbody scale-rows 24-28. Lamellae under fourth toe 20-26, slightly compressed, each with a moderately wide dark-brown callus.

Dorsally olive brown (coppery in life), darker on head, paler and more reddish on tail and limbs. Vertebral stripe absent or reduced to blackish-brown line on neck. White dorso-lateral line from last supraocular to base of tail (on which it gradually merges with ground colour), margined above with blackish brown. Upper lateral zone blackish brown, sometimes dotted anteriorly with pale reddish-brown: represented on tail by series of dark transverse marks or small spots. Narrow white midlateral stripe from behind ear to hindleg. Lower lateral zone pale greyish-brown, spotted anteriorly with white. Limbs variegated with dark brown.

Geographic variation. The above colour description applies especially to western material. Eastern specimens (Yirrkala and Groote Eylandt), as Mitchell (1955: 395) observed, have pale spots throughout the upper lateral zone. Their dorsal colour (in alcohol) is olive grey rather than brown. Other slight differences are more numerous scale-rows (never 24) and ear lobules (never 2). The Groote Eylandt specimens differ from Yirrkala specimens in the faintness or even absence of lower lateral stripe.

Two specimens from Borroloola (NMV D5114, 5603) agree generally with *essingtonii* but probably belong to another race. They have a pale-edged dark vertebral stripe, no upper lateral spots and only 19-21 subdigital lamellae.

A specimen from Oenpelli (USNM 128758) diverges still more from typical *essingtonii*. It has a black white-edged vertebral stripe; a full series of small upper lateral spots (pale brown and longitudinally elongate); 24 scale-rows; widely separated nasals; and 5 small ear lobules, the third of which is largest.

Material. Port Essington (holotype); Darwin and vicinity (QM J2623; USNM 128251-6; NMV D1640, 5156-7; SAM 3592, 9360; NTM 4057;

WAM 23449, 23501, 23518-23, 23541-59, 23589); Mt Bunday (SAM 5950-1); Oenpelli (NMV D5165-6); Yirrkala (USNM 128602-10); Bathurst Island (NMV D1654); Melville Island (NMV D5241, 5244); Groote Eylandt (NMV D9196-7; USNM 128402-7).

Ctenotus decaneurus sp. nov.

Holotype. R23130 in Western Australian Museum, collected by G. M. Storr and A. M. Douglas on 9 September 1964 at 21 mi. WNW of Newry, Northern Territory, in 15°59'S, 129°00'E.

Diagnosis. A member of the *taeniolatus* group with subdigital lamellae wider than usual and snout long and low (as in *colletti* group); back and sides blackish with a total of 10 white lines and stripes.

Distribution. Only known from two northern localities.

Description (of holotype). SVL (mm): 37. Length of appendages (% SVL): tail 187, foreleg 29; hindleg 48.

Nasals in short contact. Prefrontals widely separated. Supraoculars 4, first 3 in contact with frontal. Supraciliaries 8. Second loreal 1.2 times as wide as high. Labials 8. Ear lobules 4 or 6, subacute. Nuchals 4. Midbody scale rows 26. Lamellae under fourth toe 20, each with a moderately wide, brown callus.

Head greyish brown; back and sides blackish brown; upper surface of limbs reddish brown. White paravertebral line from nape to tail (on which it becomes pale reddish-brown). White dorsal line beginning about centre of parietal and finishing abruptly just behind level of hindleg. White dorsolateral line from last supraocular to proximal third of tail (on which it is suffused with reddish brown). White midlateral stripe from second loreal to at least middle of tail, looping above ear aperture and interrupted slightly by thigh. White ventrolateral stripe from behind bottom of ear aperture to groin, partly interrupted by arm. Limbs longitudinally streaked with dark brown. Under surface white.

Paratype. AM 13005 from "Darwin area". This specimen is poorly preserved but seems to agree with the holotype in most respects (including size, length of limbs, colour pattern and disposition of upper head-shields). It differs in having fewer labials (7), fewer nuchals (3), wider second loreal (1.9) and apparently fewer ear lobules (one of which is much larger than others and very obtuse).

Ctenotus alacer sp. nov.

Holotype. R20903 in the Western Australian Museum, collected by G. M. Storr and K. R. Slater on 18 July 1963 at Alice Springs, Northern Territory, in 23°38'S, 133°52'E.

Diagnosis. A medium-sized member of the *taeniolatus* group with black upper lateral zone bearing a series of pale spots; nasals and prefrontals usually separated.

Distribution. Stony hills of Central Australia, from Barrow Creek south to the Macdonnell Ranges.

Description. SVL (mm): 32-62. Length of appendages (% SVL): tail 204-242; foreleg 25-31; hindleg 47-55.

Nasals narrowly separated (occasionally in very short contact). Prefrontals separated (rarely in very short contact). Supraoculars 4, first three in contact with frontal. Supraciliaries 7 (occasionally 6). Palpebrals 9-12. Second loreal 1.2-2.2 times as wide as high. Labials 8 (rarely 9). Ear lobules 5, occasionally 4; second (occasionally third) largest; subacute or acute in adults, obtuse in juveniles. Nuchals 3 or 4 (occasionally 2 or 5). Midbody scale-rows 28-32. Lamellae under fourth toe 20-28 (only one specimen with fewer than 24), each with a narrow brown callus or obtuse keel.

Ground colour of head olive brown, paler on snout; and of tail and upper surface of limbs pale reddish brown. Back black with a total of 6 white lines tinged with green, yellow or brown; paravertebral from nape to base of tail, its anterior extension reaching irregularly to side of frontal; dorsal from supraoculars to base of tail; dorsolateral from supraciliaries to base of tail. Black upper lateral stripe from orbit to base of tail, enclosing a series of whitish longitudinally elongate spots tending anteriorly to coalesce into a stripe (which, bending down behind ear, joins midlateral stripe); represented on tail by pale brown stripe, very narrowly edged with dark brown. White midlateral stripe from lores to groin (whence, becoming brownish, it continues down leg), interrupted by ear aperture and tending to be discontinuous between ear and arm. White ventrolateral stripe from behind and below ear to arm (whence it continues down foreleg); sometimes represented between axilla and groin by a series of coalescing spots. Upper surface of limbs longitudinally streaked with reddish brown. Under surface white.

Paratypes. Barrow Creek (NMV D4965, 5048); Alice Springs (NTM 3945, 4105; NMV D202-3; WAM 20904); Mt Gillen (AM 12016); Mt Conway (AM 14193); Macdonnell Range (SAM 5588); "Central Australia" (NMV D208, 277).

Ctenotus quattuordecimlineatus

Lygosoma (Hinulia) quattuordecimlineatum Sternfeld, 1919. *Senckenbergiana* 1: 80. Hermannsburg, Northern Territory (M. von Leonhardi).

Diagnosis. A medium-sized member of the *taeniolatus* group; back and sides dark with a total of 14 pale stripes and lines. Further distinguishable from *alacer* by contiguous nasals and prefrontals and by having 2 white lines (instead of a series of spots) between white dorsolateral and midlateral stripes; and from *dux* by clear-cut lateral pattern, more or less distinct anterior extension of pale outer dorsal line along edge of frontonasal and frontal, and tendency for dark laterodorsal stripe on tail to be aligned with dark inner (not outer) dorsal stripe of body.

Distribution. Sandy deserts north to lat. 23°S. Extralimital in Western Australia (Eastern Division) and South Australia (Great Victoria Desert).

Description. SVL (mm): 35-62. Length of appendages (% SVL): tail 211-240; foreleg 21-32; hindleg 41-49.

Nasals in contact. Prefrontals in contact. Supraoculars 4, first 3 in contact with frontal. Supraciliaries 7 (rarely 5, 6 or 8). Palpebrals 10-13. Second loreal 1.2-1.6 times as wide as high. Labials 8 (9 in one specimen). Ear lobules 2-6, first or second largest, obtuse in juveniles, subacute in adults. Nuchals 0-4 (mostly 2 or 3). Midbody scale-rows 26-30. Lamellae under fourth toe 18-29, each with a narrow dark callus.

Material. 22 mi. E of Sandy Blight Junction (23°13'S, 129°54'E) (ERP 11573); Hermannsburg (MCZ 35380; NMV D281); Norman Gully, Palm Valley Reserve (NTM 3372); Armstrong Creek (JSE 109); 58 mi. W of Mt Olga (WAM 20781); Curtin Springs (JSE 33, 38, 47a); 16 mi. SW of Angas Downs (ERP 9910); Horseshoe Bend (ERP 9900-1).

Ctenotus dux

Ctenotus dux Storr, 1968, *J. Roy. Soc. W. Aust.* 51: 104. 5 mi NE of Dungen Table Hill, W.A. (E. R. & H. L. Pianka).

Diagnosis. A moderately large member of the *taeniolatus* group; back and sides dark with a total of 16 or 18 pale lines. Further distinguishable from *quattuordecimlineatus* by very long and acute ear lobules.

Distribution. Sandy deserts of southwest.

Description. SVL (mm): 45-67. Length of appendages (% SVL): tail 187-234; foreleg 24-28; hindleg 43-49.

Nasals in contact or narrowly separated. Prefrontals in contact. Supraoculars 4, first 3 in contact with frontal. Supraciliaries 7 (8 in one specimen). Palpebrals 10-12. Second loreal 1.3-2.0 times as wide as high. Labials 8. Ear lobules 3-6. Nuchals 2-4. Midbody scale-rows 28 or 30. Lamellae under fourth toe, 23-28, each with a dark narrow callus.

Remarks. Only the specimen from Angas Downs agrees well with topotypical *dux* in coloration. Though the remaining specimens are badly darkened by formalin, it is evident that their pale lateral lines become increasingly indistinct inferiorly—a characteristic of *C. ariadnae* (Storr 1968) of Western Australia. All specimens share another *ariadnae* characteristic: the extremely long and narrow ear lobules.

Material. Kintore Range (JSE 271); Armstrong Creek (JSE); Curtin Springs (JSE 20, 25, 47b); 16 mi. SW of Angas Downs (ERP 9905).

Ctenotus piankai

Ctenotus piankai Storr, 1968, *J. Roy. Soc. W. Aust.* 51: 106. 24 mi. ENE of Laverton, W.A. (E. R. & H. L. Pianka).

Diagnosis. A small member of the *taeniolatus* group; brown with a total of 6 white stripes or lines (a paravertebral, dorsolateral and midlateral on each side).

Distribution. Probably north to lat. 17°S. Extralimital in Western Australia (arid zone and south Kimberley) and far northwestern Queensland (Nicholson River).

Description (including 2 extralimital specimens). SVL (mm): 31-52. Length of appendages (% SVL): tail 187-260; foreleg 25-30; hindleg 42-50.

Nasals in contact. Prefrontals in contact or narrowly separated. Supraoculars 4, first 3 in contact with frontal. Supraciliaries 6 (occasionally 7 or 8). Palpebrals 8-10. Second loreal 0.9-1.7 times as wide as high. Upper labials 8 (7 in one specimen). Ear lobules 2-5, obtuse in juveniles, acute in adults. Nuchals 3-5 (mostly 4). Midbody scale-rows 24-26 (mostly 24). Lamellae under fourth toe 20-24, each with a narrow callus.

Material. 7 mi. SE of The Granites (ERP 11645); 10 mi. ENE of Thompsons Rockhole (NTM 2144); 28 mi. SE of The Granites (NTM 2609); Shaw Creek (JSE 133); Curtin Springs (JSE 47). [Western Australia: White Mountain, Ord River Station (WAM 27131). Queensland: Doomadgee Mission (SAM 5387).]

Ctenotus calurus

Ctenotus calurus Storr, 1968, J. Roy. Soc. W. Aust. 51: 107. 24 mi. ENE of Laverton, W.A. (E. R. & H. L. Pianka).

Diagnosis. A small member of the *colletti* group; tail blue above and white below (proximal subcaudals marked with black, especially ventrolaterally); back and sides black with a total of 8 white stripes or lines (a paravertebral, dorsal, dorsolateral and midlateral on each side); black spots under toes.

Distribution. Sandy deserts of the southwest.

Description. SVL (mm): 43-45. Length of appendages (% SVL): tail 202; foreleg 26, hindleg 46-47. Nasals in contact. Prefrontals in contact. Supraciliaries 7 or 8. Palpebrals 10-13. Labials 7 or 8. Ear lobules 2 or 3. Nuchals 2 or 3. Midbody scale-rows 24 or 26. Lamellae under fourth toe 22-25, each with a weak keel.

Material. 7 mi. NW of Mt Chapple Bore (23°12'S, 132°50'E) (ERP 9870); 16 mi. SW of Angas Downs (ERP 9765).

Ctenotus colletti nasutus

Ctenotus colletti nasutus Storr, 1968, J. Roy. Soc. W. Aust. 51: 108. 5 mi NE of Duges Table Hill, W.A. (E. R. & H. L. Pianka).

Diagnosis. A small member of the *colletti* group with snout long and narrow and upper ear lobule greatly enlarged; back and sides blackish brown with a total of 8 whitish stripes or lines (a paravertebral, dorsal, dorsolateral and midlateral). Further distinguishable from *calurus* by more strongly developed midfrontal streak and by lack of blue on tail and of black markings under tail and toes.

Distribution. Sandy deserts immediately south and east of the Kintore Range. Extralimital in the Great Victoria Desert of Western Australia.

Description and Material. See Storr (*supra cit.*)

Ctenotus schomburgkii schomburgkii

Lygosoma schomburgkii Peters, 1863, Mber. Akad. Wiss. Berlin 1863: 231. "Buchsfield, near Adelaide, South Australia."

Diagnosis. A member of the *schomburgkii* group with nasals and prefrontals usually separated; back black with 4 reddish or greenish-white lines (paravertebral continuous, outer dorsal tending to break up into spots); black upper lateral zone enclosing a series of pale red spots; white dorsolateral and midlateral lines well developed.

Distribution. North to The Granites and Tennant Creek. Extralimital in Western Australia, northern South Australia and western New South Wales.

Description. SVL (mm): 26-51. Length of appendages (% SVL): tail 160-212; foreleg 25-31; hindleg 44-52.

Nasals narrowly separated (occasionally in very short contact). Prefrontals separated (occasionally in very short contact). Supraoculars 4, with first 3 in contact with frontal (rarely 5 with 4). Supraciliaries 6-8 (mostly 7, rarely 8). Palpebrals 8-11 (one specimen with 13). Second loreal 1.4-2.5 times as wide as high. Labials 7 (occasionally 8). Ear lobules 2-4 (rarely 5), usually obtuse, first or second usually much larger than others. Nuchals 2-6 (mostly 4). Midbody scale-rows 25-30 (mostly 26, rarely 30). Lamellae under fourth toe 19-24 (one specimen with 27), each with a fine, dark mucronate keel.

Material. 30 mi. NNW of The Granites (AM 26942); 7 mi. SE of The Granites (ERP 11644, 11647); Tennant Creek (NMV D67); Barrow Creek (NMV D4966, 5046-7, 5049-52, 5054, 5058); 17 mi. S of Teatree (WAM 24407); Aileron (NTM 1461; WAM 24422); Kintore Range (JSE 272); Alice Springs (NMV D204); Bagots Creek (NMV D279); Palm Valley (NTM 3376); Illamurta (NMV D452-3, 456, 459, 461, 465, 472); "Central Australia" (NMV D2332).

Ctenotus schomburgkii pallescens subsp. nov.

Holotype. R24218 in Western Australian Museum, collected by G. M. Storr and A. M. Douglas on 23 September 1964 at Morphett Creek, 7 mi. S of Banka Banka, Northern Territory, in 18°53'S, 134°05'E.

Diagnosis. Differing from *C. s. schomburgkii* in pale brown back (almost patternless in adults), more midbody scale-rows, fewer subdigital lamellae and narrower second loreal.

Distribution. Northern interior from Elliott south nearly to Tennant Creek.

Description. SVL (mm): 34-44. Length of appendages (% SVL): tail 160-199; foreleg 26-28; hindleg 46-52.

Nasals narrowly separated. Prefrontals separated. Supraoculars 4, first 3 in contact with frontal. Supraciliaries 7. Palpebrals 9 or 10. Second loreal 1.4-1.7 times as wide as high. Labials 7. Ear lobules 2-5, obtuse, first usually largest. Nuchals 3-5. Midbody scale rows 28-30. Subdigital lamellae 18-22, each with a dark fine keel terminating in a mucron or short spine.

Dorsally pale greyish-brown with or without a rufous suffusion over back, tail and upper surface of limbs. In juveniles and subadults an indistinct blackish vertebral line from nape to tail (base only or whole length) and a dark laterodorsal streak from nape to base of tail, enclosing a series of pale transversely elongate spots. Pale dorsolateral line from first supraciliary to proximal part of tail. Dark upper lateral zone enclosing pale reddish-brown or greyish-white vertically narrow bars; represented anteriorly by dark loreal streak, and on tail by dark dorsolateral line. Whitish midlateral line from upper lip to hindleg, bending sharply up and down as it passes round top of ear aperture. From ear to groin a ventrolateral series of alternating grey and whitish spots or squarish blotches. Upper surface of limbs reticulated with dark brown.

Paratypes. Elliott (WAM 24188); Morphett Creek (WAM 24216); Phillip Creek, 25 mi. N of Tennant Creek (WAM 21470).

Ctenotus strauchii

Lygosoma strauchii Boulenger, 1887, "Catalogue—lizards—British Museum", 2nd edition, 3: 229. Gayndah, Queensland.

Diagnosis. A moderately large member of the *schomburgkii* group with extremely short limbs; nasals in contact; prefrontals separated; little or no dorsal pattern.

Distribution. Far south: valley of the Finke River, north and west to Tempe Downs. Extralimital in interior of eastern Australia.

Description (including 2 extralimital specimens). SVL (mm): 47-55. Length of appendages (% SVL): tail 160; foreleg 21-24; hindleg 33-38.

Nasals in moderately long contact. Prefrontals moderately to widely separated. Supraoculars 4, first 3 in contact with frontal. Supraciliaries 6 or 7 (mostly 7). Palpebrals 9-11. Second loreal 1.4-1.6 times as wide as high. Labials 8 (9 in one specimen). Ear lobules 2 or 3, obtuse. Nuchals 2-4. Midbody scale-rows 26-30. Subdigital lamellae 17-20, each with a fine dark mucronate keel.

Dorsally reddish brown with or without dark variegations (the most consistent being a laterodorsal series of very small blotches). Little or no indication of pale dorsolateral line. Upper lateral series of black oblong blotches, higher than wide. Narrow white midlateral stripe from below eye to base of tail, bending above ear aperture and interrupted by thigh; bordered below by narrow pale-grey stripe.

Geographic variation. The Birdsville specimen is a little different from the others. It is dorsally olive-grey with more pronounced blackish variegations, and there is no pattern below the upper lateral blotches. It alone has 9 labials and 30 midbody scale-rows.

Remarks. It is not known whether these populations from the Lake Eyre basin are continuous with those of eastern Queensland and New South Wales. At any rate there are few if any differences. Western specimens seem to have on average slightly more labials and fewer

nuchals, prefrontals not quite so widely separated, and ear lobules a little fewer and more disparate in size.

Material. Tempe Downs (NMV D280); Charlotte Waters (NMV D946). [South Australia: Lambinna (NTM 1548). Queensland: Birdsville (QM J9743).]

Ctenotus taeniatus

Lygosoma (Sphenomorphus) taeniata Mitchell, 1940, Rec. S. Aust. Mus. 9: 180. Andamooka Ranges, S.A. (F. J. Mitchell).

Diagnosis. A member of the *schomburgkii* group distinguishable from all others by 5 supraoculars and 8 supraciliaries. Further distinguishable from *strauchii* by longer limbs and separated nasals, and from *brooksi* by 2 presuboculars and brownish (rather than bright red) back.

Distribution. Only known from Alice Springs and the type locality.

Description. SVL (mm): 40-41. Length of appendages (% SVL): tail 180; foreleg 25-27; hindleg 44-47.

Nasals narrowly to moderately separated. Prefrontals in contact or very narrowly separated. Supraoculars 5, first 4 in contact with frontal. Supraciliaries 8. Palpebrals 9. Second loreal 1.3-2.2 times as wide as high. Labials 8. Ear lobules 4 or 5, obtuse or subacute, second largest. Nuchals 4. Midbody scale-rows 26 or 28. Lamellae under fourth toe 20-21, each with a fine dark keel.

Dorsally reddish brown with a dark vertebral line from nape to base of tail and obscure laterodorsal variegations. Whitish dorsolateral line from temple to base of tail, very narrowly edged above and below with blackish brown. An upper lateral series of blackish-brown rectangular blotches, higher than wide. Whitish midlateral line from snout to tail, interrupted by ear aperture and hindleg. Lower lateral zone like upper but paler and narrower.

Material. Alice Springs (NMV D166). [South Australia: holotype.]

Ctenotus brooksi brooksi

Sphenomorphus leae brooksi Loveridge, 1933, Occ. Pap. Boston Soc. Nat. Hist. 8: 95. "Perth, W.A."

Diagnosis. A member of the *schomburgkii* group with head and tail red in life (fading in alcohol to pale green); little or no indication of stripes; upper lateral series of small squarish dark blotches; prefrontals in contact; only one presubocular.

Distribution. Sandy deserts of the southwest, north to lat. 23°S and east to Mt Conner. Extralimital in Western Australia (Eastern Division) and western South Australia (Great Victoria Desert).

Description. SVL (mm): 27-48.5. Length of appendages (% SVL): 160-206; foreleg 24-32; hindleg 44-55.

Nasals separated (occasionally in short contact). Prefrontals in contact. Supraoculars 4 with first 3 in contact with frontal (5 with 4 in one specimen). Supraciliaries 6 or 7 (mostly 7). Palpebrals 8-11 (12 in one specimen). Second loreal 1.3-2.3

times as wide as high. Upper labials 7 or 8. Ear lobules 3 (rarely 2 or 4), obtuse in juveniles, usually subacute in adults, second usually largest. Nuchals 3 or 4 (occasional specimens have none; these are excluded from mean given in Table I). Midbody scale-rows 24-26. Lamellae under fourth toe 22-28, each with a fine dark mucronate keel.

Material. Ehrenberg Range (23°17'S, 130°21'E) (JSE 363, 379, 390, 401, 406); 22mi. E of Sandy Blight Junction (23°13'S, 129°54'E) (ERP 11555-9, 11561-3, 11565-6, 11569, 11574, 11576-7, 11592, 11602); Willie Rockhole (23°16'S, 129°45'E) JSE 333a-d, 341a-b, 350a-c, 362a-c); SE of Bonython Range (JSE 202a-e; ERP 11547); Armstrong Creek (JSE a-b); Curtin Springs (JSE 19); Mt Conner (JSE 65A).

Ctenotus brooksi aranda subsp. nov.

Holotype. 2931 in the collection of the Animal Industry Branch, Northern Territory Administration, collected by D. A. Lindner on 6 June 1965 at Ringwood, Northern Territory, in 24°21'S, 135°05'E.

Diagnosis. Differing from *C. b. brooksi* in greater size, shorter appendages, fewer subdigital lamellae and stronger pattern (including indication of white midlateral and dorsolateral lines and better development of dark dorsal lines and upper lateral blotches, which are much higher than wide).

Distribution. Simpson Desert. Extralimital in adjacent deserts of far northern South Australia and southwestern Queensland.

Description (including extralimital specimens). SVL (mm) 28-53. Length of appendages (% SVL): tail 159; foreleg 24-28; hindleg 41-46.

Nasals narrowly separated or in short contact. Prefrontals in contact. Supraoculars 4, first 3

in contact with frontal. Supraoculars 6 or 7. Palpebrals 9-11. Second loreal 1.7-2.4 times as wide as high. Labials 7 or 8 (mostly 8). Ear lobules 2-4 (mostly 3), obtuse in juveniles, usually subacute in adults, first or second largest. Nuchals 3-5 (two specimens with none are omitted from mean in Table I). Midbody scale-rows 26. Lamellae under fourth toe 19-25, each with a fine dark mucronate keel.

Remarks. This is a weakly differentiated race, and the differences between it and *C. b. brooksi* are significant only in view of the uniformity of the nominate race throughout its wide range. Recognition of *aranda* draws attention to the importance of the Central Highlands and the valley of the Finke as barriers to the dispersal of dune-inhabiting *Ctenotus*. Most other species of the western deserts have yet to be found to the east of these barriers.

Paratypes. "Central Australia, Horn Expedition" (NMV D1180, 1182, 1186). South Australia: Dalhousie (NMV D199, 207). Queensland: 14 mi. N of Fortville Tank (NMV D11997).

References

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TABLE 1

Number of specimens (number with original tail in brackets) and mean value of following characters: SVL (snout-vent length in mm); length of appendages (as % SVL); ratio width to height of second loreal; and number of midbody scale-rows, lamellae under fourth toe, supraoculars, palpebrals, upper labials, ear lobules and nuchals. Data solely from material listed in accounts of species.

	N	SVL	Tail	Fore-leg	Hind-leg	Loreal	Scale-rows	Lamellae	Supra-oculars	Palpebrals	Labials	Ear lobules	Nuchals
<i>C. ocellifer</i>	52 (24)	73	172	25.1	39.2	1.04	34.9	23.3	6.9	11.3	8.1	4.7	3.0
<i>C. ruber</i>	9 (3)	96	199	26.0	39.1	1.05	35.7	21.3	7.2	12.1	8.0	6.1	3.0
<i>C. australis</i>	7 (3)	59	198	25.5	42.3	1.21	32.0	24.9	6.9	11.0	8.1	6.0	3.4
<i>C. spaldingi</i>	21 (7)	87	220	22.9	43.0	1.91	28.6	21.0	9.8	10.8	7.3	4.3	3.0
<i>C. robustus</i>	18 (1)	106	202	23.1	39.1	1.64	29.8	20.3	9.8	12.3	7.1	4.7	3.9
<i>C. scutellatus</i>	27 (7)	74	218	23.6	39.5	1.49	29.8	21.5	7.3	10.9	8.2	4.7	2.4
<i>C. helmsi</i>	20 (7)	73	212	23.1	39.4	1.44	27.4	22.8	7.1	10.7	8.1	4.1	2.9
<i>C. inornatus</i>	146 (18)	67	215	24.5	43.6	1.41	29.7	21.7	8.1	11.1	8.0	4.8	2.8
<i>C. jordanii</i>	1 (0)	47		25.0	41.0	1.40	26.0	19.5	7.0	8.5	4.0	2.5	5.0
<i>C. leopoldinae</i>	77 (37)	60	200	25.6	45.4	1.52	28.8	23.7	7.0	10.4	8.1	4.6	3.7
<i>C. lantianensis</i>	10 (7)	75	218	25.5	46.5	1.51	30.3	26.0	7.7	11.7	8.1	4.8	2.3
<i>C. hilli</i>	12 (6)	40	211	28.2	49.8	1.28	30.7	24.7	7.4	10.6	7.2	5.3	1.2
<i>C. eximiosus</i>	61 (20)	50	217	23.9	44.0	1.25	26.5	23.1	7.8	10.0	7.1	2.8	4.0
<i>C. decussatus</i>	2 (1)	37	187	28.5	46.5	1.55	25.5	20.5	8.5	10.0	7.5	4.0	3.5
<i>C. alacer</i>	13 (4)	52	221	27.9	50.8	1.60	29.0	25.2	6.8	10.5	8.1	4.8	3.4
<i>C. quadrifasciatus</i>	12 (4)	51	226	27.0	45.4	1.33	27.8	24.8	6.8	11.0	8.1	4.8	3.4
<i>C. darwinii</i>	6 (3)	61	210	26.2	46.5	1.67	29.2	25.5	7.1	10.8	8.0	4.8	3.2
<i>C. pinkneyi</i>	7 (4)	43	226	27.7	44.7	1.30	24.7	21.9	6.4	8.7	7.9	3.7	4.0
<i>C. calurus</i>	2 (1)	44	202	26.0	46.2	1.90	25.0	23.5	7.5	11.5	7.5	2.5	2.5
<i>C. auratus</i>	6 (5)	38	217	26.4	45.4	1.75	24.0	24.2	6.0	9.7	7.7	2.1	3.7
<i>C. schomburgkii</i>	29 (11)	41	188	26.7	46.9	1.86	26.9	22.3	6.8	9.3	7.2	3.2	3.9
<i>C. pallidus</i>	1 (4)	39	182	27.0	48.9	1.53	29.0	20.3	7.0	9.2	7.0	3.5	3.8
<i>C. stuartii</i>	4 (1)	50	160	22.5	34.3	1.53	27.0	18.8	6.7	9.5	8.2	2.6	3.0
<i>C. lewinii</i>	2 (1)	11	180	26.0	15.7	1.75	27.0	20.5	8.0	9.0	8.0	4.5	4.0
<i>C. brooksi</i>	43 (30)	39	182	27.7	50.8	1.92	25.2	24.6	6.7	9.5	7.5	3.6	3.4
<i>C. aranda</i>	7 (1)	61	159	25.2	43.6	2.08	26.0	22.1	6.4	10.2	7.7	3.0	3.9